

## ABSTRACT

A two-tube centrifuge separates light material and heavy material from an input mixture. A hollow drive shaft rotates a central body member about an axis of rotation. Two hollow arm assemblies, each having circular cross-section, are mounted on diametrically opposite sides of the central body. Each arm assembly includes an outer housing tube, an intermediate tube, and an inner tube that is longer than the intermediate tube. An end cap having a removable plug is mounted on the outer end of the housing-tube of each arm assembly. The inner ends of all three tubes are mechanically interlocked in a manner to cantilever mount the inner and intermediate tubes to the central-body with their outer ends spaced from the internal surface of the end cap. An input-mixture path extends through the hollow drive shaft, through the central-body, and into a cylindrical space between the inner and intermediate tubes of each arm assembly. A heavy material exit path extends from the inner tube, through the central body, and into an exit cone that lies diametrically opposite the drive shaft and whose axis is coincident with the axis of rotation. A light material exit path extends from a cylindrical space between the inner and intermediate tubes, through the central-body, and through a wall of the exit cone. The inner tube of each arm assembly includes an auger. An electric motor drives the drive shaft. A hydraulic motor drives the auger. An oxidation reactor in a centrifuge for decanting lighter material from heavier material from a mixture of initial material and to perform an oxidation reaction process on the heavier material.